NAVY CIVIL Engineer

Spring 1991

Vol. XXX Issue 1

Lead Hazards In Firing Ranges

Page 3

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Front Cover: A shooter takes aim at a target. Cover art by Bill Brack, Naval Facilities Engineering Command Headquarters, Alexandria, Va.

NAVY CIVIL **Engineer**

Spring 1991 Vol. XXX Issue 1

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Speaking from Topside

What an exciting time to be in the Civil Engineer Corps! Significant events in world history have indeed made this an exciting yet "dangerous" period for us all. You've often heard that adversity and challenge provide opportunities. Well, we have had some of the most challenging opportunities in the past year that I can remember...opportunities to excel or be swept away with disastrous consequences. I'm pleased to report that the Civil Engineer Corps-NAVFAC-Seabee family is stronger today because of your recent performance. You've excelled in housing, maintenance and repair, environmental, Seabees, acquisition/contracting, and many other areas. Many opportunities are still unfolding, and as we pursue our jobs, I want to impress on you the impact you can have on the future of our Navy and the nation. Let me give you a few examples.

You can all take justifiable pride in your accomplishments in Operations Desert Shield and Desert Storm. If you were "on station," doing your job for the Navy, you helped keep the total defense team operating, and you contributed to the unparalleled victory enjoyed by the United States and the coalition. Of course, the Seabees in Saudi Arabia—men and women, actives and reserves—deserve even more credit. Their Herculean efforts added new luster to the Seabee legend, as they earned the praise of everyone who saw or learned of their feats. But many others provided the backup—from Seabees supporting other critical CINC projects (as I write this, the alert battalion in Rota, NMCB 133, is en route to Turkey and northern Iraq as part of Operation Provide Comfort), to countless others in direct support roles all over the world. And those of you who accepted larger workloads or kept your Navy job running smoothly contributed to the total effort that ensured success. In the challenge of war you found the opportunities to excel and to write a new chapter in Seabee history.

Aside from the Seabee world, other less dramatic but even greater challenges are racing at us from every direction. They come in different forms, but all have their genesis in the dramatic (25 percent!) reductions in both our budget and our force structure (600 ships to fewer than 450, with no battleships, fewer carriers and fewer carrier air wings).

The base realignment and closure process, which will be with us for three separate commissions at two year intervals, provides the Navy with its only avenue to ensure reduction in a balanced way, i.e., too much infrastructure properly funded leads to inadequate funds for manning ships, steaming and flying. Said another way, if the Navy properly mans, steams, and flies then we will not come close to having the funds required for base operating support, family housing and MILCON. The process is tedious, the analysis difficult, the impact to affected individuals, communities and local businesses often painful, but if we are going to get a handle on the future facility business, base closure is absolutely necessary.

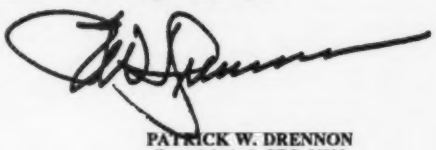
Having escaped the first round of Defense Management Report Decision (DMRD) reviews, which are aimed at efficiencies and cost savings primarily through consolidations among the services, the second round hit us big time. DMRDs in MILCON management, facilities engineering, family housing and the Defense Business Operating Fund (DBOF) tested the very fiber of our being. . . to be more exact, our existence! Several proposals for MILCON management were recommended by the staff of the Secretary of Defense, ranging from the Army Corps of Engineers doing all MILCON, to NAVFAC doing it all, to a mixture of the two, to finally a decision to keep two construction agents. Our NAVFAC/CEC integrated engineering and contracting system emerged as the premier management approach and model for others to emulate. However, the challenge to prove we are a top professional organization will always be with us, so we must continuously strive for improvement. You will hear these three words often in the future: customer, innovation and risk.

RADM Patrick W. Drennon, CEC, USN

Public works centers were held up as the ideal way to do facilities engineering/public works business, and thus you will see new and expanded PWCs in the Navy, but also PWCs in the Army and Air Force. Execution of this proven concept even within the Navy will not be easy. Family housing DMRD initiatives were so egregious that for the second year in a row they were disapproved, but not without enormous effort. Next year? DBOF will simply make everything a part of one industrial-type fund or another. This among all other DMRDs has the most potential for wide ranging impacts. We don't know yet how Congress will react to DBOF. Air depots, RDT&E activities, supply centers and commissaries are but a few of the others being changed or consolidated by DMRDs.

Also, even with their success in Desert Shield/Storm, we had to fight to keep our Seabee force levels from being reduced more than a fair share in the reserves.

From my perspective in OP-44, the challenges and opportunities for our Navy, NAVFAC and the CEC have never been greater. Every challenge I've touched on will place increased demands on NAVFAC and every CEC officer. The operating Navy that we all support, more than ever, will look to and depend on us. I have no doubt from the quality of our officers and civilian personnel that we will succeed. It will take, however, a dedicated effort by each of us to learn about and understand the lessons from Desert Shield and Storm and the intricacies of each new DMRD initiative, so that we can provide the innovative solutions that our Navy and Marine Corps customers have come to (and should) expect. Do this as well in the face of our changing Defense structure, as you have done in the past, and you will ensure a positive future. It is an exciting...and challenging...time to be in the Civil Engineer Corps!



PATRICK W. DRENNON
Rear Admiral, CEC, USN
Director,
Shore Activities Division

Assessing Lead Hazards at Indoor Firing Ranges

By Robert M. Warling, M.P.H., C.I.H.
Marion Gailey, P.E.

About 400 B.C., Hippocrates first described the signs and symptoms of lead poisoning he observed in miners and metalsmiths. Since ancient times, lead smelting and refining have been recognized as potentially hazardous. Today, lead solder used in electronic procedures and flame spraying of molten lead to metal surfaces are also seen as potentially dangerous.

Toxic effects of inorganic and organic forms of lead are devastating. Learning disabilities in children have been attributed to early lead exposures. Consequently, lead environments require close evaluation.

Lead exposures acquired through recreational activities are becoming a concern to many industrial hygienists and safety professionals. The Navy's lead policy is covered in the OPNAV Instruction 5100.23B, Chapter 21. This instruction, also known as the Naval Occupational Safety and Health (NAVOSH) manual, implements federal regulatory requirements at naval installations. The federal standard and the NAVOSH manual restrict personal lead exposures to a level of 50 micrograms/cubic meter (mg/m^3), as determined by a time-weighted average (TWA) of eight hours.

The action level, defined as approximately 50 percent of the permissible exposure limit (PEL), for inorganic lead is 30 mg/m^3. Periodic air sampling for lead dust and fume should indicate measurable lead concentrations at or below 30 mg/m^3 at all times. When the action level is reached, lead monitoring should be increased and all necessary remedial actions taken.

Employees at indoor firing ranges and those who patronize them are frequently at increased risk of toxic lead exposure because the ventilation systems at most of those ranges fail to control lead concentrations to the levels required under the OSHA standard (29 CFR 1910.1025). Decades of industrial hygiene surveys of indoor firing ranges have demonstrated that many ranges present an unacceptably high risk of lead exposures to indoor firing range employees. Blood lead specimens collected from

The firing range's exhaust assembly on the left discharges toward the air intake assembly on the right. A vertical exhaust stack should be used and positioned to preclude recycling of exhaust air into the supply intake.

Robert M. Warling directs the occupational health studies at the Naval Safety School in Bloomington, Ind. Marion Gailey manages the industrial ventilation program at the Southern Division, Naval Facilities Engineering Command in Charleston, S.C.

Sampling the Air

Above, the hose running down the shooter's back connects the filter to the calibrated air pump.

Lead dust and fume samples are obtained using a calibrated air pump. A known quantity of air is drawn through a mixed cellulose ester filter. The lead contaminant collects on the membrane surface. An analytical laboratory digests the filter with an acid mixture, and the lead concentration is determined by atomic absorption spectrophotometry.

Right, a shooter wearing the cylindrical sampling cassette containing a filter.

indoor firing range employees have substantiated these findings.

Since exposures frequently exceed recognized standards, sampling data must be collected for a full eight-hour work period. Air sampling of shorter duration is useful for determining peak concentration limits. This shorter duration sampling, however, should be clearly differentiated from the longer eight-hour sampling.

Using partial sampling periods to adjust PEL-TWAs is an inappropriate assumption and professionally unethical. An exception is when an absence of worker lead exposures can be ascertained with a high degree of certainty during the remainder of a work shift. When determining lead exposure levels for federal compliance, environmental and personal samples should always be collected over an eight-hour period.

Regional air pollution control districts may require further assessments to determine compliance with local community lead emission standards. Lead dust emitted from exhaust stacks should be sampled to determine if the exhaust filters or collection system complies with Environmental Protection Agency emission standards.

References to lead hazards of firing ranges date back to 1947. At that time, the American Conference of Governmental Industrial Hygienists (ACGIH) recommended 200 mg/m³ as an acceptable TLV-TWA. (TLV is threshold limit value.) The current federal and NAVOSH lead standard is 50 mg/m³, a level four times more stringent than the previously accepted lead exposure limit. Even though ACGIH disagrees with a 50 mg/m³ limit and recommends 150 mg/m³ as safe, the federal standard of 50 mg/m³ as a PEL-TWA takes precedence.

Hazard abatement

Engineering controls are the primary choice for hazard abatement. The U.S. Navy's indoor firing range design criteria are in MIL-HDBK-1027/3A. The specification is based on ACGIH's Industrial Ventilation Committee's recommended design for an indoor firing range. This design reduces lead levels and, consequently, the risks of harmful exposures.

The current indoor range design recommends placement of a perforated plenum at the rear of the firing range. This plenum allows entry of the necessary make-up air without generating air turbulence (such as directing air entry in a laminar flow manner). Without the plenum, air velocities at the firing line may vary drastically.

Some areas have low velocities or dead zones that are ineffective in capturing lead dust. Other areas have high velocities which blow from behind the shooters, against the back of their shoulders and head, creating a low pressure zone just in front of each shooter. The result is a mixing of lead dust and fume directly within the shooter's breathing zone.

A misconception is the belief that lead dust cannot be suspended in air since it is about 7.5 times heavier than air. Although lead dust will eventually fall to the ground, the slightest air currents will resuspend lead-ladened dust into an easily inhaled aerosol. Exhaust systems in indoor firing ranges, like other ventilation units, are intrinsically under-designed and frequently overrated as an effective control. Long distances between the source of the lead dust and the ex-

haust hood contribute to this inefficiency.

Another major concern is the relatively limited static pressure rating commonly found in the exhaust fans used to control exposures. Testing new or modified ventilation systems is important to determine if duct velocities are adequate to meet design criteria to control lead levels. Ventilation systems are routinely checked by engineers before industrial processes are initiated.

These engineers, however, tend to use ventilation testing procedures they learned for heating and air conditioning, which deal with much lower duct velocities and much lower static pressures. Most engineers lack formal training in the principles of local exhaust ventilation, and even fewer have used a pitot traverse tube with an inclined manometer, or have calculated static pressure losses through application of the velocity pressure method. The probable reason for this deficiency is quite simple: Their university engineering program failed to provide a course in the design and testing of industrial ventilation.

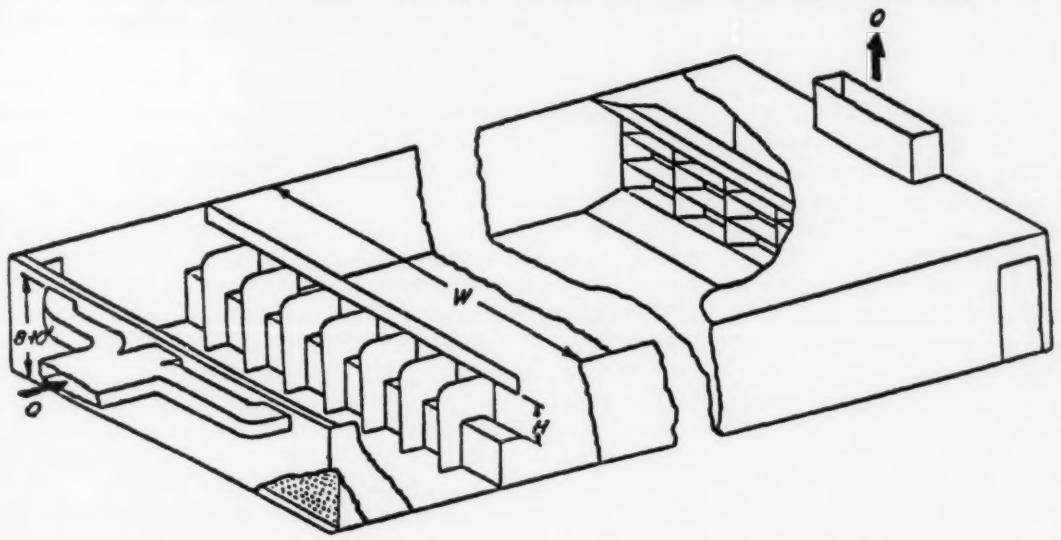
Clean-up of firing ranges

Indoor firing range ventilation systems are usually moderately to heavily contaminated with lead dust. A comprehensive clean-up of indoor firing ranges is necessary before removal and replacement of existing fans and ventilation ducting. Personnel assigned to the clean-up procedures must receive extensive occupational health training as required by OSHA regulations and outlined in 29 CFR 1910.1025.

Safeguards are needed for clean-up workers even when lead contamination is contained within the ventilation ductwork. Depending upon the potential for lead exposure, employees may be required to wear protective equipment such as cotton coveralls, gloves and approved disposable coveralls, and receive fit-testing with respirators. The respirator used should be determined by an industrial hygienist on a case-by-case basis.

The initial cleaning of indoor firing ranges and the adjacent areas usually requires using an approved high efficiency particulate (HEPA) filtered vacuum cleaner. The firing range should be washed down with

ACGIH-Recommended Indoor Firing Range Design



Q_{min} = 75HW, but not less than 20 cfm/sq ft of room cross sectional area

Make-up air distribution:

- Uniform air distribution necessary
- Perforated rear wall or ceiling plenum system preferred
- Where grills or diffuser are used, terminal velocity near firing line must not exceed 50 fpm

detergent and water, using sponge-type swabs. Care must be taken to prevent waste water from entering floor drains that connect to a sanitary sewerage system. The use of carpeting at indoor ranges is ill-advised, and carpeting should be replaced after decontamination with an approved impervious floor covering.

Range operation

A standard operating procedures manual is recommended at most firing ranges. Specific topics might include daily/weekly schedule of maintenance and clean-up procedures throughout the range, including the bullet impact area. Sweeping dry floors should be prohibited since lead dust will be aerosolized, increasing the potential lead exposure to range personnel.

Vacuuming lead dust using a HEPA filtered vacuum cleaner is mandatory unless it is shown to be ineffective. Another work practice that should be considered is collecting the empty brass shells in small plastic dishes (such as a disposable butter dish) placed at each firing line position to minimize the amount of shell casings on the range deck and to eliminate the need to separate spent shells from the vacuum cleaner.

The range manual should establish maintenance schedules, and discuss the possibility of rotating instructors. This administrative action reduces prolonged lead exposures to staff members. Operating procedures should contain a schedule of industrial hygiene surveys and recommend frequency for biomonitoring (such as hearing evaluations, pulmonary function tests, blood lead sampling and training). As part of the training, supervisors should emphasize that lead can seriously impair one's health. Subordinates should be encouraged to cooperate with safety and health professionals during air sampling, biological monitoring and environmental surveys.

Biological monitoring

Biological monitoring is generally effective for assessing lead exposures. Laboratories now use sophisticated analytical methods that are highly accurate in measuring the presence of lead.

Lead analysis by using atomic absorption spectrophotometry procedures accurately measures quantities of lead in the blood and the air. These assays are good indicators of the body's lead burden deposited in tissues and organs. Clinical laboratories screen for blood zinc protoporphyrin (ZPP) in addition to assessing blood lead levels. ZPP levels are good indicators of exposures occurring within the past 90 to 120 days.

Several states require laboratories conducting clinical testing for lead to report elevated values to their state health departments. This results in a better measure of the extent of lead exposures in the general population. The lead standard requires the employer to remove an employee from a hazardous work place, occupation, or working environment when the employee's blood lead value is 60 mg/dL or higher.

Lead exposures acquired through recreational activities are becoming more of a concern to many industrial hygienists and safety professionals.

Another health risk is the potential for employees to ingest lead particles when supervisors permit them to consume food and beverages, or smoke in lead contaminated areas. Although the risk of lead absorption by ingestion is considered less likely than by inhalation, poorly enforced regulations increase the risks of lead poisoning. Indoor ranges that are not properly maintained, or slowly deteriorate into unsanitary conditions, increase the potential for lead absorption by ingestion. Employees and patrons of indoor firing ranges are not the only ones at risk to lead exposures. Range participants commonly wear their street clothes home without changing, thereby needlessly exposing their families to some degree of health risks.

Recommended design

The ACGIH-recommended indoor firing range design provides for even air flow across the firing line's eight positions. MIL-HDBK-1027/3A recommends using the formula: $Q = 75$ HW, as opposed to ACGIH's formula: $Q_{min} = 50$HW as the volume of air that should be exchanged. Q indicates volume in units of cubic feet per minute, W (measured in feet) describes the width of the range, and H (also measured in feet) is the height from an overhead, or the ceiling, down to the surface of the counter, or bench rest, at the firing line.

A successful design is dependent upon an even air flow. Make-up air serves two purposes. Outside air must be brought in to compensate for the air that is exhausted. Second, the air intake creates a buffer effect, keeping the lead-contaminated air downrange.

Continued on page 25

Hazardous Waste Minimization for Navy Public Works Centers

By Gregory T. McBrien

Since 1988, the Naval Facilities Engineering Command has conducted a hazardous waste minimization program for public works centers worldwide. In the program, waste reduction measures for hazardous wastes generated by public works operations are identified. Each public works center is provided with a detailed inventory of hazardous wastes generated or handled by the center. Technical assistance for the program is provided by the Argonne National Laboratory.

Hazardous wastes are generated by various industrial activities including facility maintenance (such as painting), vehicle maintenance, utility operations (such as electric power generation), and materials that are discarded from the supply system due to shelf-life expiration. In 1988 alone the public works centers generated more than 100,000 gallons of hazardous waste from their operations.

Hazardous waste minimization recommendations cover broad categories of waste types and possible solutions. The recommendations for each center include use of specific equipment or technologies, improved hazardous waste management, improved waste inventory and tracking, training, waste segregation, waste exchanges and incentive programs. Effective management of hazardous materials that are purchased by supply departments to reduce excess stock or shelf-life expiration problems is also recommended. Specific technologies or equipment can be used to reduce or recycle wastes from industrial operations, such as degreasing with solvents.

One example of effective equipment is a solvent still to recover solvent from waste after degreasing operations are performed. The solvent still can recover up to 80 percent of the waste solvent for reuse in parts cleaning where virgin solvent is not required. Another technology that can reduce waste is the paint tinter. Use of this simple device can replace the practice of stocking paints of various colors, which can lead to excess paint. This excess paint must then be disposed as waste when it exceeds shelf life. By stocking tints for various colors and mixing the paint as it is needed, the public works centers can reduce their waste from painting operations.

Segregation of hazardous waste from non-hazardous waste will reduce waste disposal cost and reduce worker exposure to hazardous chemicals. Most of the recommendations for waste reduction involve little or no capital expenditures, but do require changes to operating procedures or waste handling methods by the public works centers.

In addition to the individual reports for each center, the program includes a waste minimization video as a training tool. The video gives ideas for reducing wastes, such as segregating waste oils from solvents, reducing the supply of excess hazardous materials, and using less hazardous substitutes for solvents.

Argonne and its consultant teams have completed site visits to all the public works centers, with the exception of Pearl Harbor. This center is included in a separate Department of Defense Hawaii Hazardous Waste Minimization project. Draft reports for the public works centers in the Navy program have been submitted, and final recommendation reports for the public works centers will be completed by mid-1991. NAVFAC headquarters will then work with the public works centers to implement the final recommendations. It is estimated that the project will allow NAVFAC to reach the OPNAV goal of a 50-percent reduction of hazardous waste by the end of 1992. ❑

Solvent still at Public Works Center Guam.

Gregory T. McBrien in an environmental engineer at the Naval Facilities Engineering Command in Alexandria, Va.

Alternative Design/Construction Methods: Let's Try Something Different

By CAPT Robert F. Smith, CEC, USNR
CAPT Richard F. Cowan, CEC, USNR

The Naval Facilities Engineering Command's Command Management Plan for Fiscal Year 1990* had a particularly exciting goal:

"3-07A Alternative Design/Construction Methods: Each EFD shall execute at least two projects using alternative design/construction methods such as two-step sealed bidding, source selection and Newport design/build."

Why did we adopt such a goal?

- To exercise facilities acquisition methods needed in a mobilization contingency or, as occurred twice in 1989, in natural disaster recovery
- To improve those methods by experience, refinement of techniques, and suggesting policy changes at the Department of Defense level or higher
- To build skills in using these methods well by the military and civilian professionals in the NAVFAC family
- To benefit from the innovations offered by the construction industry
- To save money and work years

* * *

Yes, it's true. Fixed-priced, competitively bid construction contracts based on definitive plans and specifications can cost the Navy *more* money on some projects. Just ask the staff of a resident officer in charge of construction office where unexpected conditions generated a high volume of changes and claims!

What kinds of projects are best suited to alternative acquisition strategies? Let's review some alternative ideas that may be useful in special circumstances. Alternatives to sealed bidding include two-step sealed bidding, source selection, prequalification and limited competition. Each procedure has its advantages. Guidance and approval requirements for using these contracting techniques are included in the Federal Acquisition Regulations and various subordinate regulations.

Two-step sealed bidding

In step one, there is a request for, and submission and evaluation of, a technical proposal (without pricing) to determine compliance of the proposed work with technical specifications. Step two is the submission of bids by only those firms that were determined to be technically acceptable under the step one evaluation. Award is made to the low conforming bidder. This method is most suited for facilities described by performance specifications, with allowance for many possible acceptable solutions. Examples are requirements for storage space of given dimensions that could be met with a variety of pre-engineered buildings, or equipment with stated capacities that could be provided by a variety of manufacturers.

Source selection

When the basis for selection is price and other

**As part of a change in the NAVFAC management process, the use of a Command Management Plan was discontinued in FY 1991. This in no way invalidates the initiatives detailed in this article.*

CAPT Smith is the commanding officer and CAPT Cowan is the executive officer of the Naval Reserve Engineering Field Division West.

factors such as quality or delivery schedule, this method may be applicable. Offers are evaluated based on pre-established technical criteria and then price is considered. Award is made to the offeror proposing the best overall value to the government. This method has been used for the procurement of multi-unit family housing projects and sophisticated electronic facilities.

Prequalification

DFAR 236 permits prequalification of firms for projects which are urgent and complex. With appropriate approval, firms are prequalified upon pre-established criteria, then invited to submit proposals on the project. In some instances, a preliminary 35 percent design is provided to the prequalified offerors for submission of their initial proposals. Proposals are evaluated, and best and final offers are submitted based on the 100 percent design.

Limited competition

Under certain circumstances, it may be possible to limit competition required for a particular acquisition or, if circumstances justify, to a single contractor. Urgency or the absence of competition could possibly justify this procedure.

During the repair of the earthquake-damaged Oakland Bay Bridge, the Navy justified without competition using the California Department of Transportation contractor for bridge repairs to also repair the Navy's water supply line supported by the bridge. If only one firm is capable of performing work, direct negotiations with a sole source may be justified.

***

In addition to the alternative methods for meeting competing requirements, there are alternatives to the traditional approach of separate contracts for design and construction.

Combining both design and construction requirements is not unusual in negotiated-type procurement but is new in sealed bid competition. Requiring the contractor instead of the government to provide the required capital investment for new facilities is also a new idea being used.

Newport design/build

Combining the requirement for design and construction in a single contract using sealed bid instead of negotiated procedures is a new concept. In this approach, the government provides basic data about the project requirements with perspective and performance specifications, site plans and floor plan drawings. Then, sealed bid competition is conducted, with award made to the low bidder. A detailed design is then prepared and submitted by the contractor. The design is reviewed by the government with construction following the final approval of the contractor's detailed design. However, if the government and contractor are not able to finally agree upon the design details and proceed to construction, there is a buy-out provision that provides 2.5 percent of the bid cost for the expended effort to be paid to the contractor. NAVFAC's Northern Division is using the Newport strategy for the acquisition of child care centers.

Public/private ventures

Special statutory authority permits the government to enter into long-term contracts with private parties as well as municipalities for facilities located on government land which may serve both the government and the private party. Municipal waste incineration facilities and electric cogeneration facilities, which serve the interests of the private parties as well as provide steam energy to the Navy as a by-product, are examples of such innovative solutions to satisfy facility requirements.

Outgrant of government facilities

At Construction Battalion Center Port Hueneme, Calif., an importer stages his automobiles on Navy land in exchange, not for rent, but for improvements to existing pavements, fences and railroads. Agricultural outleases are also examples in which the Navy benefits by allowing a lessee to use government land. The leases have to be justified by the Secretary of the Navy based on the interests of the United States.

Lease existing facilities

Instead of building a new BOQ, enter into a lease of nearby hotels or apartments. As a variation, contract for an *operated* facility. Another variation might be the build-to-lease method. Here, a private developer builds facilities that the government leases.

Continued on page 25

Federal Facility Agreements at Naval Installations

FFAs are a valuable tool in cleaning up past contamination.

By William Judkins

The Superfund Amendments and Reauthorization Act of 1986 requires that federal facilities comply with many of the same provisions that apply to non-government organizations for the cleanup of hazardous and toxic waste sites. One provision is that federal hazardous waste sites be assessed concerning the relative degree of risk to human health and environment.

Following assessment, the Environmental Protection Agency includes high-priority cleanups on the National Priorities List. For each of the 23 Navy facilities currently on the list, the act requires the Navy to enter into an interagency agreement with the EPA within 180 days after EPA approves the Navy's proposed plan to clean up the site. Each agreement must include:

- A review of alternative cleanup actions that could be taken
- The cleanup action selected by the Navy and EPA
- A schedule for completion of each cleanup action
- Arrangements for long-term operation and maintenance of the site cleanup

Since the Navy is in the midst of completing proposed cleanup plans for NPL sites, EPA and the Navy have been negotiating Federal Facility Agreements. The states, if they wish, may also participate in the FFAs. These agreements will satisfy the requirement to have an interagency agreement and demonstrate to Congress and the public that progress is being made in the cleanup of Navy facilities. Other benefits of the agreements include:

- Strengthening the working relationship between the Navy, EPA and the states
- Establishing the parties' mutual obligations
- Reducing the possibility that duplicate work efforts, each required by different laws, will be needed to clean up a site
- Satisfying the requirements of Section 120 and other portions of the act

Major provisions of the Federal Facility Agreements

The typical agreement contains approximately 40 sections. To expedite negotiations, EPA and the Department of Defense, in 1988 and 1989, agreed on model sections to include in each agreement. The model provisions include:

- *Dispute resolution.* Procedures for dispute resolution are established. If there are questions concerning the applicability of the agreement to

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certain situations or the responsibilities of the parties, disputes may be resolved through specific dispute resolution committees.

Disputes may be resolved at any time in the process, and the dispute may be ultimately referred to the EPA Administrator for final resolution.

• *Consultation with EPA and the state.* By establishing procedures whereby the Navy, EPA and the state provide each other the opportunity to review, comment and respond to documents required by the act and the agreement, coordination between the parties will be enhanced.

• *Stipulated penalties.* Failure to submit a major document to EPA for review and approval by an established deadline, or failure to comply with a term or condition of the agreement relating to an interim or final cleanup, subjects the Navy to the possibility of assessment of a monetary penalty.

Jacqueline E. Schafer, assistant secretary of the Navy (installations and environment), signs a Federal Facility Agreement addressing the cleanup of past hazardous wastes at three naval air stations in Florida. Also signing were (left to right) Dale Twachtmann, Florida Department of Environmental Regulation, and Greer C. Tidwell, regional administrator of the U.S. Environmental Protection Agency Region IV. The agreement concerning NAS Jacksonville, NAS Cecil Field and NAS Pensacola was signed on Oct. 23, 1990, at the headquarters of the Florida Department of Environmental Regulation in Tallahassee.

Miss Schafer and Secretary Twachtmann also signed the first-ever Petroleum Contamination Agreement to formalize procedures to assess the pollution threat from petroleum storage tanks and fueling activities at 22 installations and nine Navy and Marine Corps Reserve Centers in Florida.

With 23 Navy and Marine Corps installations on the EPA's National Priorities List for past hazardous wastes, the Department of the Navy has made a major effort to establish working agreements with state environmental authorities and EPA regional administrators. As of early April 1991, the Navy has signed 17 FFAs, with the remaining six projected for signature this year. FFAs outline timetables, procedures and consultation processes related to the cleanup of past hazardous waste sites.

• *Reconciliation of the requirements of the Superfund Act and the Resource, Conservation and Recovery Act.* The agreement states that the parties intend to integrate the requirements of the Superfund Act and Resource, Conservation and Recovery Act.

This integration will reduce the possibility that cleanup done under the Superfund Act will need to be redone based on Resource, Conservation and Recovery Act requirements.

Status of Federal Facility Agreement Negotiations for Navy/Marine Corps Installations on the National Priorities List

Installation	Navy, EPA & State Signed Agreement	Only Navy & EPA Signed Agreement	Nearing Signature	1991 Negotiations
MCAS Yuma, Az.				✓
MCLB Barstow, Calif.	✓			
MCB Camp Pendleton, Calif.	✓			
MCAS El Toro, Calif.	✓			
NAS Moffett Field, Calif.	✓			
NAVSTA Treasure Island (Hunters Point Annex), Calif.	✓			
NSB New London, Conn.				✓
NAS Cecil Field, Fla.	✓			
NAS Jacksonville, Fla.	✓			
NAS Pensacola, Fla.	✓			
MCLB Albany, Ga.			✓	
NAS Brunswick, Maine	✓			
NIROP Fridley, Minn.	✓			
MCB Camp Lejeune, N.C.	✓			
NWS Earle, N.J.		✓		
NAEC Lakehurst, N.J.		✓		
NADC Warminster, Pa.		✓		
NSGA Sabana Seca, Puerto Rico			✓	
NCBC Davisville, R.I.				✓
NETC Newport, R.I.				✓
NSB Bangor, Wash.	✓			
NUWES Keyport, Wash.	✓			
NAS Whidbey Island, Wash.	✓			

Other major but non-model provisions included in the agreements are:

• *Reimbursement of EPA oversight costs.* The model provisions do not include any requirement or condition that DOD components reimburse EPA for oversight costs (including expenses incurred in document reviews).

• *Record of Decision and Plans for remedial action.* By establishing procedures and contents of submissions which will result in the selection of a final record of decision for the method of site cleanup, the remediation of the site will be expedited.

Benefits

The Navy recognizes the advantages of involving EPA and the states in the cleanup process. Accordingly, by negotiating the FFA, the Navy formally establishes coordination with the EPA and the state in the cleanup studies and decisions required by the Superfund Act. By directly involving the EPA and the state in the site cleanup studies and proposed remedies, the Navy seeks a cooperative and collaborative effort to avoid discovering problems late in the process that could result in costly delays. The early establishment of good working relations resolves potentially conflicting regulatory requirements for cleanups, such as those that occur between seemingly contradictory requirements of different laws.

Negotiations

The FFA negotiating process involves the Naval Facilities Engineering Command as the lead, the Navy/Marine Corps installation, the EPA Regional Office and, if it wishes to participate, the state.

The identification and resolution of issues typically takes six to nine months. This time is needed because of the complexity of the agreement which must be negotiated for the different conditions at each installation.

Also, the final document is a legal instrument which obligates the parties to perform stated actions by timetables and deadlines, with the possibility of monetary penalties in the event of delays. Once the parties conclude negotiations, the agreement is signed and made available for public comment. Comments received are considered and appropriate changes are made, if necessary, before the agreement goes into effect.

Coordination and signature

Proposed agreements are coordinated with the installation commanding officer and the Office of General Counsel (Environmental Law Office) and the Office of the Chief of Naval Operations (OP-45) before presenting them to EPA and the state. Following coordination and review, the FFA is signed by the Assistant Secretary of the Navy (Installations and Environment), a regional EPA administrator and a representative of the state.

Agreements promote rapid cleanup

The completed agreement is a legal document which provides a detailed management plan for the effective cleanup of the facility. By involving EPA and the state, the Navy is ensuring their early participation and demonstrating federal leadership in cleaning up past contamination. The FFA enhances the working relationships, cooperation, timeliness, effectiveness, and coordination between the Navy, EPA and the state. It also provides a strong management tool for promptly resolving issues rising from overlapping or conflicting jurisdictions.

The agreements will promote a more rapid cleanup of Navy sites listed on the National Priorities List. The Navy plans to negotiate all remaining agreements in FY 91. ❑

Energy Management at the Naval Air Development Center

An innovative program that results in improved energy efficiency and increased productivity

By Michael M. Blank, Ph.D., P.E.
John J. Chmielewski
Michael G. Manes

The Naval Air Development Center's Energy Management Program is a system that incorporates energy conservation, planning and other factors that affect the productivity and efficient operation of the center.

The key element of the Energy Management Program is Energy Management Modeling (EMM), which was developed by the work management/energy branch of the facilities management division. EMM's goal is to foster the efficient use of electricity, fuel oil, natural gas, and propane gas at NADC. In the modeling program, the energy program is planned, organized, managed and monitored. EMM also identifies relationships among the facility management, engineering, maintenance and other departments involved in the energy conservation program, and improves links between design and implementation of the energy conservation program. In EMM, lessons learned in previous engineering, management and maintenance projects are applied to every construction project, regardless of size, during the early scoping and design stages as well as during the maintenance operations. Proper planning and design can prevent problems in construction and maintenance.

In EMM, two factors play a vital role in any energy-related public works project:

- Method of determining, calculating and maintaining the advantages/disadvantages of energy conservation program element
- Methods of implementation, including education of the utility consumer

The personal computer and the mainframe computer are integral parts of planning, design, facility management and maintenance in the public works department. More than 80 personal computers are in use in the NADC public works department, helping in planning, management and operational control. Computerization will continue to increase in the public works department since it quickly provides accurate calculations. The majority of all energy conservation projects require extensive calculations to verify their effectiveness. Without computers this would be an extensive or even impossible engineering task.

The Energy Management Program is complex and dynamic. Many factors contribute to this program, and some if not handled correctly may produce negative results. An example of negative results would be a project that saves energy by decreasing creature comforts and thus lowers morale and productivity. The Energy Management Program, as all Navy programs, must meet various constraints of budget, time and manpower. An important factor for the implementation of the program is the good cooperation and communications between all involved personnel.

Scoping Energy Management Program

The Energy Management Program includes short- and long-term planning. Short-term facilities planning generally requires less capital investment. Long-term facilities planning is integrated with the facility's five-year plan and is generally technically more complex, requires larger capital investment, and involves longer lead and construction time. Four major methods for short-term and long-term planning of energy efficiency analysis are:

- Simple payback period
- Return on investment
- Benefit to cost ratio or savings to investment ratio
- Life cycle cost

The Naval Air Development Center has more than 126 buildings and structures, an 8,000 foot runway, and associated facilities. Most of the structures and facilities required renovation, alteration, repairs or modification to reflect frequent changes of the NADC mission. As part of the Energy Management Program, the public works department analyzes energy usage in these facilities in these 12 areas:

- Building envelope system
- Heating, ventilation and air conditioning system
- Lighting system

Michael M. Blank is head of the work management/energy branch at the Naval Air Development Center in Warminster, Pa. He is currently a member of the ASCE Inspection Material Application Committee. John J. Chmielewski is director of facilities management at NADC. Michael G. Manes is a project manager at NADC.

- Equipment
- Routine energy maintenance and operations program
- Steam plant
- Water heating system
- Steam distribution system
- Appliances (housing)
- Diagnostic and preventive energy maintenance program
- Energy board and coordinators program
- Landscaping system

The analysis of the 12 areas of energy usage looks at:

- Functionality
- Quality of life
- Appearance
- Utilization of energy
- Employee awareness of energy management

Here are descriptions of some of the areas or systems that are analyzed.

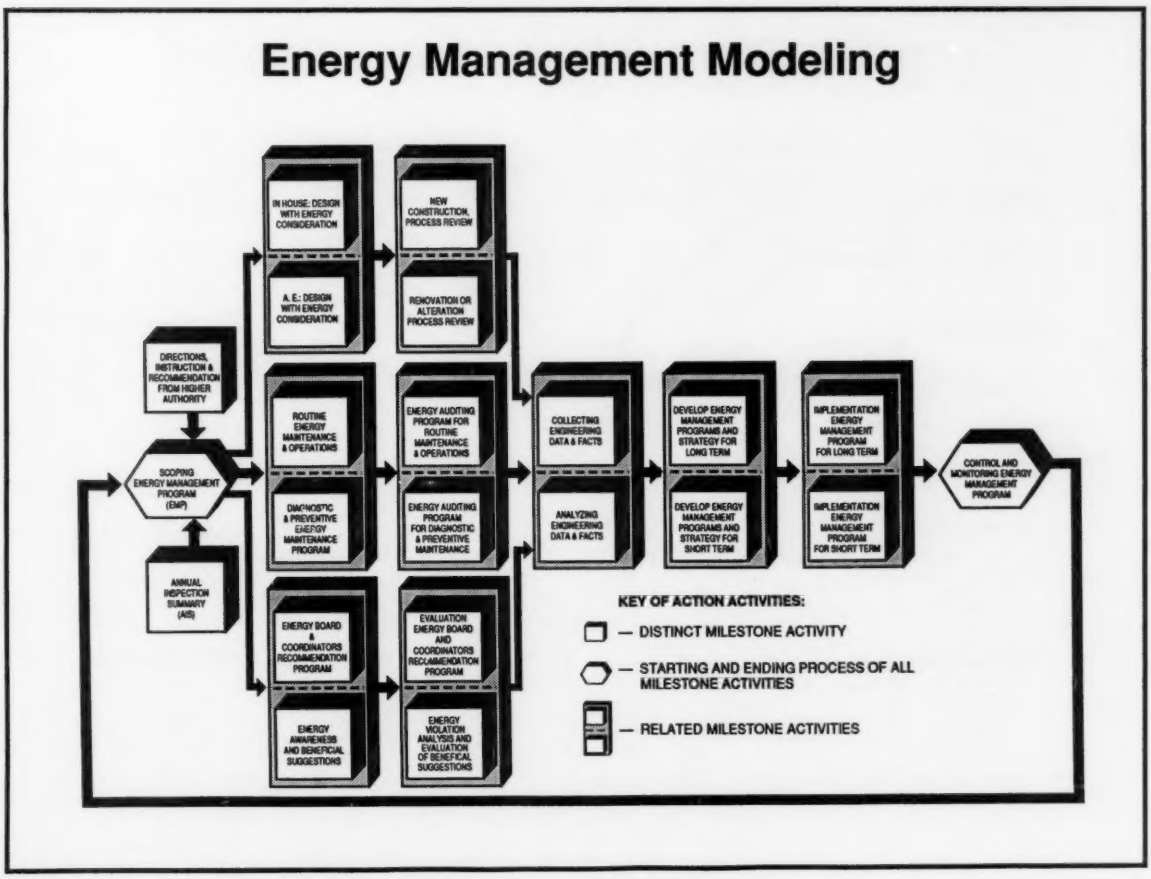
Steam plant and distribution system. The central steam plant and distribution system at NADC are important parts of EMM. The steam plant consists of three independent water tube boilers with a combined steam capacity of 97,000 pounds per hour. Steam is generated at 100 to 110 psig and reduced in the boiler plant before distribution.

In this distribution system, as in every system, a certain amount of energy is lost. These losses are:

- Energy losses in stack
- Radiant and convective energy lost at boiler
- Energy lost in blowdown process
- Radiant and convective energy in distribution system
- Energy lost in facility buildings

After the EMM analysis, changes were made to increase the energy efficiency. Boilers are now tuned up twice a year. This significantly reduces the level of excess combustion air, and improves the efficiency of the boiler. Plant work inspection and maintenance routines have been implemented to verify that all steam lines, valves, steam traps and other fixtures are operating properly. The majority of this work is done by outside contractor.

Diagnostic and preventive energy maintenance program. Diagnostic maintenance is a new concept in industry and in public works. It uses


Energy Management Modeling
IN HOUSE: DESIGN WITH ENERGY CONSIDERATION
A. E.: DESIGN WITH ENERGY CONSIDERATION
NEW CONSTRUCTION, PROCESS REVIEW
RENOVATION OR ALTERATION PROCESS REVIEW
DIRECTIONS, INSTRUCTION & RECOMMENDATION FROM HIGHER AUTHORITY
SCOPING ENERGY MANAGEMENT PROGRAM (EMP)
ANNUAL INSPECTION SUMMARY (AIS)
ROUTINE ENERGY MAINTENANCE & OPERATIONS
DIAGNOSTIC & PREVENTIVE ENERGY MAINTENANCE PROGRAM
ENERGY AUDITING PROGRAM FOR ROUTINE MAINTENANCE & OPERATIONS
ENERGY AUDITING PROGRAM FOR DIAGNOSTIC & PREVENTIVE MAINTENANCE
ENERGY BOARD & COORDINATORS RECOMMENDATION PROGRAM
ENERGY AWARENESS AND BENEFICIAL SUGGESTIONS
EVALUATION ENERGY BOARD AND COORDINATORS RECOMMENDATION PROGRAM
ENERGY VIOLATION ANALYSIS AND EVALUATION OF BENEFICIAL SUGGESTIONS
COLLECTING ENGINEERING DATA & FACTS
ANALYZING ENGINEERING DATA & FACTS
DEVELOP ENERGY MANAGEMENT PROGRAMS AND STRATEGY FOR LONG TERM
DEVELOP ENERGY MANAGEMENT PROGRAMS AND STRATEGY FOR SHORT TERM
IMPLEMENTATION ENERGY MANAGEMENT PROGRAM FOR LONG TERM
IMPLEMENTATION ENERGY MANAGEMENT PROGRAM FOR SHORT TERM
CONTROL AND MONITORING ENERGY MANAGEMENT PROGRAM
KEY OF ACTION ACTIVITIES:
— DISTINCT MILESTONE ACTIVITY
— STARTING AND ENDING PROCESS OF ALL MILESTONE ACTIVITIES
— RELATED MILESTONE ACTIVITIES

advanced technology to examine systems to locate *potential* problems. (Using infrared thermography to locate sources of energy waste is an example of diagnostic maintenance.) In preventive energy maintenance, however, routine maintenance schedules are followed. EMM encourages the use of preventive maintenance *and* diagnostic programs.

Landscaping. Landscaping may be used for energy conservation and improving the physical appearance and the quality of life at NADC. The majority of buildings of NADC are close together, and the bulk of available land is used for parking, roadways and walks. Landscaping is used for screening, shade, noise abatement, wind control and as a buffer zone. Landscaping design considers building site and structure, position of the sun at different times of the year, and the anticipated directions of the wind in those seasons. Trees planted in the proper location may serve as a windbreak in the winter or as shade in the summer, decreasing the heating or air conditioning respectively. Landscaping has low initial cost and its energy payback increases steadily as the tree matures.

Employee awareness of energy management. Employee acceptance and active involvement in EMM are essential parts of good energy management.

Making energy management information available to employees in a highly visible manner is important. Ways of marketing this information include:

- Publish energy management hints, cartoons or articles in the in-house publications
- Distribute posters, flyers, stickers and other promotional material
- Establish an energy hotline
- Establish Periodic Energy Management Board meetings with all senior energy coordinators and energy manager
- Encourage employees to submit energy savings ideas as beneficial suggestions
- Display energy saving information on base video system

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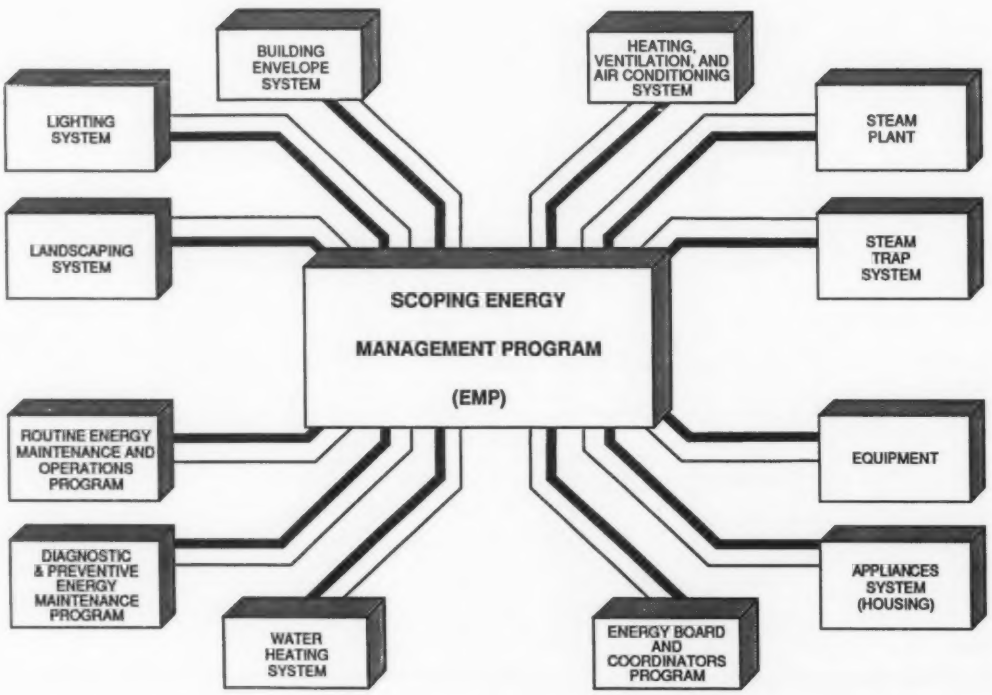
Scoping Energy Management Program



Seabee Update

This section of the *Navy Civil Engineer* magazine takes a look at what the Seabees, both active and reserve, did in 1990. Their activities included disaster relief projects, training, civic action projects, construction, and test and evaluation projects.

Additionally, active and reserve Seabees traveled to the Persian Gulf to serve during Operations Desert Shield and Desert Storm. An in-depth examination of what they did there will appear in an upcoming issue of the magazine.

DFTs Pay Off for CBLANT

Naval Mobile Construction Battalions must be able to perform many operational tasks in diverse operating environments. Commander, Naval Construction Battalion, U.S. Atlantic Fleet has recently formalized a contingency training program to test and polish battalion readiness to execute these required operational capabilities in remote locations. This program, called deployments for training (DFTs), is in addition to the training provided in homeport.

DFTs are small, short duration deployments to austere environments other than main body or detail sites to engage in contingency construction, humanitarian/civic assistance projects or exercise-related construction. The program provides the battalion commanding officer the opportunity to give additional leadership training and experience to those junior officers and senior enlisted who may not otherwise get air detachment or detachment officer in charge experience.

DFTs develop and test skills in mobilization, survivability, sustainability and contingency/expeditionary construction. COMCBLANT plans three DFTs for every peacetime deployment. These deployments consist of 25 to 40 Seabees for a 45- to 60-day period and can be under joint command in support of a Joint Chiefs of Staff-directed exercise. Typically, a DFT will consist of a military heavy fly away in conjunction with an embarkation exercise, equipped to self-sustain in a field environment with limited or no replenishment flights.

Before Operation Desert Storm, NMCB Four, while deployed to the Caribbean, executed a DFT to the Island of Gun Cay in the Bahamas, where it constructed a drug interdiction facility for the U.S. Customs Agency and the Bahamanian Defense Force. The battalion also built a helicopter landing pad with remote lighting system, installed diesel generators and built a service road, among other projects.

During that deployment, NMCB Four, with augment from RNMCBs 20 and 24, executed a DFT to the Jamaican Defense Force base camp in Moneaque, Jamaica. Embarking in conjunction with JCS-directed exercise Ocean Venture 90, the detachment flew men and equipment into

Continued on page 24

Disaster Relief in CBPAC

When Hurricane Ofa whirled her 125 mph winds into American Samoa in February 1990 the Seabees were quickly there with a detachment of 30 men to clean up and make emergency repairs to the electrical distribution system on the island of Tutuila.

The effort to deploy involved almost every element of the Pacific Naval Construction Force. The 31st Naval Construction Regiment and Naval Mobile Construction Battalion 40, which was at homeport in Port Hueneme, Calif., were flown to Hawaii. NMCB 133 personnel, then deployed to Guam, flew from Guam to Hawaii to join up with Samoan land aircraft barely 36 hours after the first call for assistance to Commander, Naval Construction Battalion, U.S. Pacific Fleet. The Kangroos of 133 went to work within one hour of landing in America Samoa.

In just 45 days the men of NMCB 133, homeported in Gulfport, Miss., were able to replace and straighten 225 power poles, repair 20 miles of power line, install 99 service drops, and make friends with the Samoan people.

While these men were making repairs, the main body of NMCB 133 in Guam finished a very successful Kennel Bear embarkation exercise and worked on helicopter landing pads at the naval magazine; fabricated and assembled steel camels and separators; replaced high carbon steel fuel lines at the fuel piers; and worked on a fleet hospital storage facility adjacent to the naval air station.

Also deployed to the Pacific during some portion of 1990 were NMCB 74 and Seven. These two battalions phased through Okinawa with main bodies and had detachments in Adak, Alaska; Pohang, Korea; Yokosuka,

Continued on page 24

After repairing the damaged rail lines, NMCB Three Seabees and Tunisian Army engineers jointly constructed gabion erosion protection.

NMCB Three Operations in the African Desert

By LCDR G. E. Eichert, CEC, USN
LTJG Michael J. Zucchero, CEC, USN

During their European deployment (January to August 1990), Naval Mobile Construction Battalion Three reinforced the Seabee reputation in the North African desert. The NMCB Three air detail conducted disaster recovery operations in Tunisia in February and March.

As part of Exercise Atlas Rail, Seabees worked jointly with Tunisian army engineers to repair flood ravaged rail lines. NMCB Three returned to North Africa from June to August 1990.

This time, Seabees from the Sigonella detail performed civic action work in Morocco as part of Exercise African Hammer. NMCB Three Seabees received valuable training in a hot, windy, desert environment during both exercises. More importantly, they departed Tunisia and Morocco knowing they had strengthened Arab/American relations at a particularly critical time.

LCDR Eichert is the operation officer for NMCB Three. LTJG Zucchero was the officer in charge of the Morocco detail and is currently the engineering officer for NMCB Three.

Atlas Rail

Devastating floods hit central Tunisia in late January 1990, displacing families and destroying railroad lines and bridges. The Tunisian economy was severely disrupted and immediate humanitarian relief was needed. Atlas Rail was a joint Tunisian/American military engineer exercise directed by the Commander in Chief, U.S. Naval Forces Europe, in response to a request for flood recovery assistance from the Tunisian government.

NMCB Three's advance party arrived in Sfax, Tunisia, by air on Feb. 13. The detail, supplies and heavy equipment arrived by sea on Feb. 16. Following construction of a joint advance base camp in Graiba, Seabees and Tunisian army engineers began flood recovery operations. The rail line south to Gabes was reopened on Feb. 26.

By March 16, 34 projects, including a 700-meter bypass of the Guifla Bridge, were completed in the rugged desert terrain. The detail departed Tunisia for Rota, Spain, by sea on March 19.

African Hammer

NMCB Three had another opportunity to demonstrate the Seabee "Can Do" spirit three months later. Moroccan officials requested U.S. Navy Seabees rehabilitate a school located at Sidi Slimane Air Base, approximately 100 kilometers northeast of Rabat, Morocco. The school, which served 400 children from the base and local communities, was in a very poor state of repair.

Major health and safety deficiencies required immediate attention. Exercise African Hammer was undertaken to complete the requested civic action work.

NMCB Three detail Romeo Mike's advance party arrived in Rabat, Morocco, on June 20 and the main body arrived within a week. Following construction of a tent camp on the Sidi Slimane Air Base, construction and rehabilitation operations began at the school on June 27. Despite a tight work schedule, 115 degree heat, and occasional heavy winds, all tasking, plus additional work, was completed on time.

An impressive Moroccan ribbon cutting ceremony was held on Aug. 1. During the ceremony, the air base commander, families and school children expressed their appreciation for the Seabees' efforts.

Exercise Atlas Rail and Exercise African Hammer provided Seabees opportunities to demonstrate their spirit, dedication and unselfish willingness to help those in need. ❑

20th NCR Trains Reserves for Deployment in Support of Desert Storm

By JO2 Mark K. Ellis

With the activation of reserve units across the country in support of Operation Desert Storm, the 20th Naval Construction Regiment in Gulfport, Miss., was busy developing and implementing a training program to prepare the new active duty Seabees, including those from Reserve Naval Mobile Construction Battalions 16 and 24, for deployment.

Preparing a reserve battalion for activation is quite a chore when you think about bringing together 600 troops who have been spread across two or three states and molding them into a self-sustaining unit. "When we get the word that a reserve battalion is coming on line we go to work developing their training schedule. We have to be very flexible because varying priorities require continuing change, and we must insure all critical training is accomplished," explains 20th NCR training coordinator Martha Rounsaville.

The reserves were pushed through an abbreviated homeport training cycle in three weeks. An active battalion's normal homeport is seven months.

Special construction battalion training is worked into the training cycle to smooth any rough edges that individuals may have in their rating. These one to two week courses provided by the Naval Construction Training Center hone technical skills which may not have been used for a while. Additionally, NCTC teaches chemical, biological and radiological personal protection to all hands.

These courses are routinely scheduled, but according to training officer John Magandy, the involvement of Seabees in the Middle East expanded the training needed. The NCR brought in mobile training teams which specialized in skills concerning counter terrorism, mine recognition, desert combat and survival, transportation of hazardous materials, and amphibious embarkation. ❑

JO2 Ellis is a Navy journalist for Naval Mobile Construction Battalion Seven assigned TAD to Construction Battalion Center Gulfport, Miss.

A tower is lifted into place by a construction team from RNMCB 13.

Seabee Automated Mobile Management System (SAMMS)

By George Berninger

Management information systems personnel at the Civil Engineer Support Office have been installing the Seabee Automated Mobile Management System and training Seabees on the system. Nearly 1,000 computers have been distributed to the active and reserve units that make up the Naval Construction Force. Each active battalion received nine desktop computers, 20 portable computers, and one laptop computer. Each machine was configured to perform a myriad of management and administrative functions.

Personnel in CESO's management information systems department were tasked with developing software that would automate functions peculiar to NCF units, such as administrative, supply, equipment management, and camp maintenance.

In addition, the SAMM system computers can run application programs supplied by other Department of Defense organizations that enable Seabee personnel to perform disbursing, food service, medical and dental record-keeping, and embarkation task functions. Commercial programs for word processing, electronic spreadsheet, database management and construction management were also distributed with the hardware. ❑

George Berninger is head of the Management Information Systems Department at the Civil Engineer Support Office.

UCT One: "Can Do" Goes Deep

By LT William J. Bender, CEC, USN

From the ice pack north of Greenland to the sands of Saudi Arabia and a few points in between, Underwater Construction Team One was busy in 1990 providing support to the fleet worldwide. This team of 55 men and women completed projects in nine locations, conducted military training and excelled on inspections.

UCT One, out of Little Creek, Va., is similar to a Naval Mobile Construction Battalion but smaller and typically works underwater. Construction is performed by three identically equipped 15-man air dets. Projects normally run for one to six months and vary from pier construction to emergency repairs of waterfront structures.

The year was kicked off with a training deployment to Guantanamo Bay, Cuba. All three air dets cycled through an intense three-week period of SCUBA and surface supplied training dives.

Within two weeks of returning from the tropics, air det Alfa was off to Greenland for month long deployment on the arctic ice pack. The camp was set up by flying in on ski-equipped C-130s, a new twist to the embarkation exercises for the Seabees at UCT One. "This was the most challenging and remote assignment I have ever tackled, but I would do it again in a heart beat," said det leader BUCS(DV) Rickie Deems. His most memorable experience was the first time he dropped through the 8-foot-deep ice hole and dove under the ice pack. The det survived three severe Arctic storms with winds up to 80 knots.

Once the det thawed out from the north they were on their way to Mayport, Fla., via Camp Lejeune (military training) to repair a degaussing range. The Seabee divers earned

Continued on page 24

LT Bender is the executive officer of Underwater Construction Team One.

UCT One aboard LARC V en route to dive site in Argentia, Newfoundland.

The children enjoyed the T-shirts and ball caps distributed by the Seabee dets.

UCT Two: Civic Action in the South Pacific

By BU2(DV) Nick Landwer

Nine Seabee divers from Underwater Construction Team Two participated in the South Pacific (SOPAC) Regional Cruise. SOPAC cruises are conducted annually with the dual objective of performing civic action tasking and presenting a positive image of the U.S. Navy in remote locations throughout the Central and South Pacific. This was the first civic action tasking undertaken by UCT Two.

The cruise began on June 22, 1990, when the UCT Two detail, embarked aboard the USS *Florikan* (ASR-9), departed Pearl Harbor, Hawaii. The Seabee civic action detail remained aboard the *Florikan* for approximately three months, making a total of nine port calls. The first two stops were in the Republic of the Marshall Islands at the island of Ebeye in the Kwajalein

BU2(DV) Landwer is a member of Underwater Construction Team Two Air Detail BRAVO.

Atoll and at Majuro. In both Ebeye and Majuro, the detail painted and made repairs to elementary and public schools. Then it was on to Tarawa in the Gilbert Islands for a three-day visit where the Seabee detail painted four small medical clinic buildings and installed security fencing around another. At the conclusion of each visit the Seabees enjoyed the enthusiasm and friendship of the local children while distributing T-shirts and ball caps marked with a Seabee logo.

Upon arrival in Guadalcanal in the Solomon Islands, the Seabee detail got to work immediately upgrading a dilapidated rural public school. In just four days the Seabees constructed much needed classroom furniture, installed stairs, replaced the exterior walls and painted three classroom buildings.

After departing Guadalcanal, the Seabees, as well as the *Florikan* crew, enjoyed a few days of well-deserved rest and relaxation in the Australian coastal cities of Cairns and Brisbane, before arriving in Port Moresby, New Guinea, for more civic action work. In Port Moresby, a third grade class in a nearby village school was being held beneath an existing elevated classroom building. The makeshift classroom had no exterior walls, no electrical power or lighting and insufficient classroom furniture. The Seabee detail enclosed the classroom, installed power outlets and overhead lighting, and manufactured 40 new desks. In Port Moresby, as well as in the other locations, the Seabees received a great deal of help from both the local civilian population and the crew of the *Florikan*.

The most exciting and unusual civic action tasking during the cruise was undertaken at the remote islands of Nauna and Tong, which are located in the Bismarck Sea. At both islands, the Seabees from UCT Two used their skills as Navy divers and underwater

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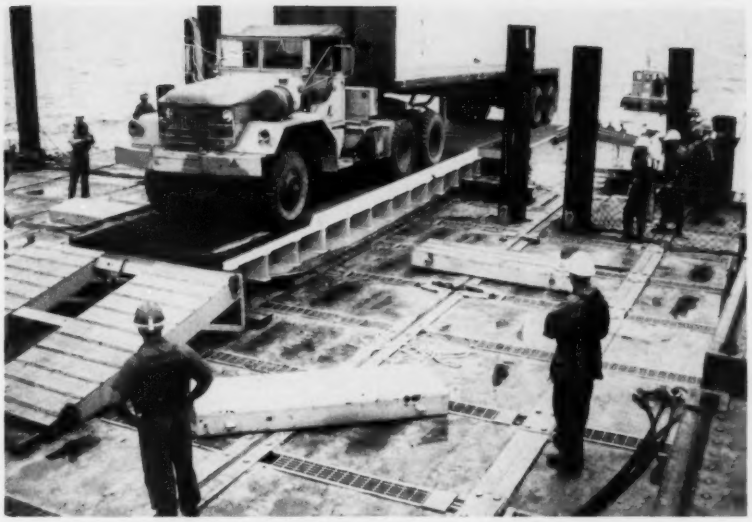

A tractor trailer successfully drives up and over a LMMSA ramp.

PHIBCB Two Supports the Fleet

The amphibious construction battalions are unique among the Seabees in that they work directly for the surface fleet in supporting amphibious operations.

During 1990, PHIBCB Two maintained a hectic operational tempo while executing several assignments in support of Maritime Prepositioned Force and Naval Beach Group exercises.

In addition to its normal duties of providing detachments for Mediterranean Amphibious Readiness Group deployments, supporting local operations and training more than 700 selected reservists, it participated in several important test and evaluation projects and brigade-sized multi-service amphibious exercises.

In March and April 1990, 400 active duty and selected reserve personnel participated in Operation Ahuas Tara '90, a Maritime Prepositioned Force exercise in Honduras. This involved a complete offload of all equipment and supplies from two MPSRON One ships, as well as the pumping ashore of fresh water from a third for sustainment of forces ashore.

Additionally, a 45-man engineering detachment deployed on board the USS *Austin* to prepare the beach and egress roads prior to the operation.

More than five miles of roadway were constructed and 20 acres of swampland drained and cleared in support of the staging areas, transportation lanes and a 600-man camp. In spite of extreme heat and torrential rain, the round-the-clock offload and backload of the ships were completed within the two-week timeframe allotted.

In July and August, the elevated causeway system (ELCAS) was erected to conduct a first time test and evaluation (in conjunction with the Naval Civil Engineering Laboratory) of the lightweight multipurpose modular spanning assembly as a ramp between ELCAS and a floating roll-on/roll-off platform.

This spanning assembly effectively increases the operational capabilities of ELCAS by allowing simultaneous offload of cargo and rolling stock as part of a logistics over the shore evolution. ❑

Reserve Naval Construction Force personnel on their way to the Mask Confidence Center, a gas chamber. They later deployed to the Persian Gulf area.

NCTC Gulfport Wins Training Excellence Award

The Naval Construction Training Center in Gulfport, Miss., has won the Chief of Naval Technical Training's Excellence Award for fiscal year 1990 for medium size schools with 300 to 999 students on board. This award is presented in recognition of superior training effectiveness, resource management, and administration.

NAVCONSTRACEN Gulfport was selected based on continued exceptional efforts to improve the training environment for Seabees in basic, advanced, and special construction battalion courses. This is the first time a NAVCONSTRACEN has won this award.

NAVCONSTRACEN Gulfport is committed to continuing to provide immediately useful training. Over 3400 students completed a one-day course in chemical, biological, and radiological defense during the last year.

Instructors sometimes taught courses around-the-clock to ensure that students were well trained to defend themselves against possible CBR attack, particularly while deployed to Saudi Arabia during Operation Desert Shield/Storm. ❑

NCTC Port Hueneme Initiates Model "A" Schools Program

The Naval Construction Training Center, Port Hueneme, Calif., in 1990 trained 3,443 "A" and "C" School students.

The "A" School pipeline saw some changes as the command successfully implemented the Chief of Naval Education and Training-directed "A" School Military Training program. It offers remedial help to students in an effort to reduce academic attrition.

The command has also been working on implementation of a program to improve the effectiveness of test materials.

NAVCONSTRACEN upgraded its Table of Allowance (TA-14), including a thorough review of the condition of training aids, technical training equipment, and technical support equipment.

In other areas: the disaster recovery and underwater construction schools moved into new facilities; Alfa company tested new explosives for use in Naval Construction Force quarry operations; and the Engineering Aid School conducted the first "C1" Advanced Construction Inspector course. ❑

Reserve Seabees Hit the Deck Running

By CDR (Sel) Phil Cogan

To hear Rear Admiral Jack Buffington describe it, you almost can't tell the reserve Seabees in Operation Desert Storm from their active duty counterparts without a scorecard.

RADM Buffington, commander, Pacific Division, Naval Facilities Engineering Command, says "The Reserves are virtually indistinguishable from the active forces from the moment they report." This past year RADM Buffington has had reason to recall reserve Seabees not just to deploy to Saudi Arabia but also to backfill for those active units that went forward. Seabees have been sent from PWC units to Subic Bay and augment units to the CBCs.

"They hit the deck running—you don't even know they're reserves," he said. "And that's the way we planned it."

If you look for the location of recalled Reserve Seabees on a map, you're just as likely to find them in Port Hueneme, Calif., or Subic Bay, Republic of the Philippines, as you are to spot them in the Middle East itself.

As some active duty forces were deployed to the Desert Shield theater, their crucial missions were performed by reservists recalled to replace them. In other cases, the tremendous stateside workloads required rapid augmentation by reservists.

Help at Subic Bay

A labor dispute at Public Works Center, Subic Bay in early October threatened to interrupt basic utilities and services there. Due to Operation Desert Shield, the Pacific Ready Battalion was unavailable to fill in as they had in the past labor strikes, so Reserve Public Works Center, West was recalled to active duty. Later elements of this unit deployed to the Middle East to support NAVCENT.

Help in U.S. too

Across the Pacific in California, Naval Reserve Construction Battalion Center, Port Hueneme, Calif., stood up 60 members to provide support to the center.

At Naval Construction Battalion Center, Gulfport, Miss., an urgent augmentation need in December was met in a few days by 37 reservists who volunteered to perform annual training; many of them reported within two days of being notified of the need, even though that meant leaving family and friends during both Christmas and New Years holidays.

RADM Buffington says, "That's pretty typical of the reserve Seabees' response to the needs created by Desert Storm." ❑

CDR (Sel) Cogan is the public affairs officer at RD NAVFAC, Washington D.C.

Reserve Seabees to the Rescue!

In May 1990, the flooding Arkansas River reached Naval Reserve Center Fort Smith, Ark. Four feet of standing water were on the center's grounds and in its buildings when the Seabees from Reserve Naval Mobile Construction Battalion 28 arrived to help. Due to their immediate response, the center reopened within five days.

At other reserve centers, reserve Seabees on facility management teams saved tax dollars while providing essential repairs, renovations and maintenance.

The Seabees installed light fixtures, doors, ceilings and performed other work at centers from Maine to California, receiving valuable rate training in the process.

During the spring and summer, the Reserve Naval Construction Force participated in a massive training exercise that was also one of the largest civic involvement projects ever undertaken by reservists. Reserve Seabees spent six months renovating Camp Mataguay, a Boy Scout reservation 40 miles northeast of San Diego.

RNMCBs 12, 13, 15, 22, 25, and 28, plus members of other units, improved Mataguay during their two weeks of annual training. The camp is operated by the San Diego Council, Boy Scouts of America, who provided materials, supplies and permits, while the Seabees contributed manpower and expertise. Seabees repaired roads and water systems, built and repaired bridges, and performed flood repair work. Also built were staff quarters and maintenance, shower, and laundry facilities.

As it turned out, the reserve Seabees were credited with saving the camp from destruction when a forest fire hit the area in late June.

The new water system—including fire hydrants, which the camp lacked before—let firefighters, who reached the camp on roads built and improved by the Seabees, control the blaze and prevent major damage to the camp. ❑

DFTs...

Continued from page 17

Kingston on an exercise airlift, then convoyed north to Moneaque. They constructed pre-engineered metal buildings on concrete slab foundations and concrete masonry walls. Detailed plans for equipment and tool requirements proved key in the success of the DFT, as no replenishment flights had been planned.

Because of the extensive logistics involved, rock crushing is an atypical mission during a DFT. Nonetheless, NMCB Three provided this support to a Marine air ground task force from the First Marine Expeditionary Force during JCS-directed Exercise Ahuas Tara in Choluteca province, Republic of Honduras. Under joint/combined conditions and within a low/mid intensity conflict scenario, the men of NMCB Three, augmented with reserve Seabees from RNMCB 16 and 17, developed and conducted quarry and crusher operations to provide mineral products to the Marine engineer roadway construction project and to U.S. Army units participating in the exercise.

During each DFT, the operational readiness skills of the Naval Construction Force are honed and displayed to other services, agencies and nations. Also, the active and reserve Seabees participating in DFTs gain irreplaceable experience and an opportunity to display the Seabee "Can Do" pride. ❑

Disaster Relief...

Continued from page 17

Iwakuni, Sasebo, and Kamiseya, Japan.

NMCB 74 and Seven were busy helping improve and complete facilities to support the Marines. Among other projects, they built outdoor recreation pavilions at Camp Kinser and Camp Schwab; started a new building for the public works department at Camp Lester; installed poles, did lighting and hung transformers around a ballfield; and began converting two bachelor enlisted quarters into office buildings at Camp Butler. NMCB 74 and Seven each did major work on the Small Arms Remote Target System, which is where III MEF tank crews practice line gunnery training in Okinawa.

Following the departure of both the Guam and Okinawa battalions in support of Operation Desert Shield, RNMCB 23 was recalled from Ft. Belvoir, Va., and after two weeks of refresher training deployed in November to Guam.

In December 1990, the raging winds of Typhoon Russ pummelled Guam, knocking out most of the island's electrical power. Russ was one of the strongest typhoons to hit Guam in recent years, with almost a direct crossing and with sustained winds of 150 knots. After a day in the typhoon shelters, the battalion emerged to find the south end of Guam had been hit extremely hard with severe property damage and major power outages across the island. The crews started work cleaning up even while there were 50 mile per hour winds, and soon after began restoring electrical power to most of the island in time for Christmas. ❑

UCT One...

Continued from page 20

their dive pay on this project. On the bottom of the channel, at night, in mud over their heads, and in a strong current, this was not the diving scene advertised by tour promotions.

Hard work does pay—air det Alfa was shipped out to Bermuda for an inspection of an underwater system and some waterfront structures. Here the water was warm and visibility 100 feet, an atypical project for any UCT det.

Air det Bravo hosted the training evolution on Guantanamo Bay, and then did work for the naval station. These projects included a channel survey using high tech survey equipment, and pier, bridge and pipeline inspections.

Next Bravo deployed onboard the USNS *Mohawk* to inspect the offshore towers of the Charleston tactical aircrew combat training system. UCT Two assisted in this demanding inspection, which involved surface decompression dives to 160 feet.

Air det Charlie personnel spent the first part of homeport overhauling their surface supplied diving equipment and recompression chamber. The det deployed to Argentia, Newfoundland, Canada, for a pier inspection. ❑

UCT Two...

Continued from page 21

construction technicians to clear small boat channels through the fringing reefs using explosives. The fringing coral reefs surrounding these islands made access by small boats difficult and very dangerous. To correct this problem, the Seabee divers donned SCUBA gear and set explosive charges underwater to blast a channel through the reef wallowing the island fishermen. The fishermen can now safely get their fishing boats in and out. At Tong Island, the locals named their newly constructed channel "Seabee Passage" in honor of those who built it.

Throughout the cruise, the UCT Two detail personnel were fascinated by the various cultures and traditions with which they had come in contact. However, the most memorable experiences of all were the strong bonds of friendship and cooperation established between the Seabees and the local island inhabitants. ❑

Assessing Lead Hazards...

Continued from page 6

In theory this design should work effectively. However, problems will develop even when the best efforts at engineering controls are seemingly perfect. For example, this design allows for eight shooters to fire simultaneously without due consideration for the volume of lead being generated by each shooter.

At commercial and private ranges, shooting enthusiasts bring different calibers of handguns, and sometimes rifles and shotguns to practice their accuracy on paper targets. When it comes to protection from lead poisoning, shooters have an extremely false sense of security as to the reliability of the range's ventilation system.

Without establishing some limits on the size and types of firearms, lead control effectiveness at the firing line is compromised.

Costly engineering controls can be easily compromised by the sheer volume of lead particulates being generated. Range managers must know which lanes are most efficient in terms of protecting the shooter from lead exposures, and assign the shooters to those positions first and most often.

For more than a decade, nylon-clad rounds have been advocated as a means to reduce lead exposures at indoor ranges. These bullets, coated with nylon, and copper and zinc-jacketed rounds generate less lead dust at the firing line than do non-coated rounds.

The substantial increased cost per round is a primary disadvantage to using coated bullets. Additionally, there have been some reports that zinc-jacketed bullets have a tendency to "rebound" from the bullet trap back toward the firing line, an undesirable characteristic most shooters would like to avoid.

The handling and loading of bullets, especially at home and around children, can be another common source of lead exposure.

Lead is markedly different than other metals like iron and zinc, which provide nutrients for the body. Whether inhaled or ingested, lead particulates are absorbed and stored in body tissues.

Lead accumulation in bones is most disconcerting since this storage site is more permanent, sometimes requiring treatment with chelating agents—a detoxifying procedure, difficult to administer and highly toxic by nature.

Lead poisoning will remain a major health hazard regardless of government regulations to monitor workers. However, to minimize the hazards, efforts to limit exposures to all known sources of lead contamination, especially at indoor firing ranges, should be pursued. ❑

Alternative Design/ Construction Methods...

Continued from page 9

A need for housing Soviet inspectors of U.S. military operations in Utah was satisfied in this way. A benefit of leasing is the flexibility of the duration of the lease—as short as a few months, or as long as many years (with Secretarial approval)!

These examples show the wide variety of facility solutions currently in use by military and civilian professionals.

The selection of the traditional approach to satisfying facility requirements should not be automatic.

Quality acquisition planning, a knowledge of all the applicable regulations, and an innovative spirit will result in the best approach to meeting the Navy's facilities needs. ❑

Energy Management...

Continued from page 16

The facility management division and the NADC security branch created an Energy Violation Analysis to look at seven categories: lighting, heating, windows/doors, laboratory equipment, air conditioning, coffee mess and ventilation. The Energy Violation Analysis report shows monthly energy violation or energy problems which occurred in various departments or areas.

A typical report would indicate items such as lights or equipment left on when unattended, and doors or windows left open at the end of the day.

This report is distributed by the energy program manager to the appropriate department heads and to the designated senior energy coordinator where these violations occurred.

Corrective action is always recommended.

EMM goals

The Facilities Management Division of the public works department at the Naval Air Development Center has incorporated Energy Management Modeling to integrate several valid goals.

The primary goals are to improve energy efficiency and increase personnel productivity throughout the center.

Additional goals are improvements in the quality of life, morale, community relations and appearance of the center.

The public works department is achieving these goals by use of a complete, integrated study of energy consumption, as well as applying new technology and materials to uses of energy.

Primary areas where corrective energy usage can be improved include buildings envelope, heating and air conditioning, and lighting. ❑

45 Complete Basic Training at CECOS

Forty-five members of basic class number 193 graduated on March 29 from the Naval School, Civil Engineer Corps Officers, Port Hueneme, Calif. The class completed eight weeks of specialized training pertinent to the Navy's needs for shore installation engineering, public works management, construction contracting and administration, and Seabee operations.

ENS Eric M. Asby
BSCE/Michigan Tech.
to WESTDIV Cont. Off.,
NS Seattle, Wash.

ENS Keith E. Autry
BA, Arch./Virginia Tech.
to LANTDIV Cont. Off.,
Keflavik, Iceland

CWO2 William F. Bailey
to PWC Norfolk, Va.

ENS Craig R. Brabec
BSIE/Purdue Univ.
to NS Mayport, Fla.

ENS John J. Brady
BSSE/USNA
to CHESDIV Cont. Off.,
Patuxent River, Md.

ENS James L. Brown
BSCE/Oregon State Univ.
to OICC NAVFAC Contracts,
MIDPAC, Pearl Harbor,
Hawaii

ENS Kevin L. Brown
BSOE/USNA
to PWC Great Lakes, Ill.

ENS Gordon E. Clark Jr.
BSCE/BSES/Univ. of
Lowell/Springfield Coll.
to WESTDIV Cont. Off., NS
Everett, Wash.

ENS Macklin T. Cunningham
BSCE/Univ. of Texas, Austin
to OICC Far East Cont. Off.,
Okinawa, Japan

ENS Raymond R. Deck
BSCE/Memphis State Univ.
to LANTDIV Cont. Off.,
Keflavik, Iceland

ENS Jeffrey A. Dryden
BSCE/Col. Sch. of Mines
to NMCB 40,
Port Hueneme, Calif.

ENS Robert A. Everett
BSME/Univ. of Vermont
to PHIBCB Two,
Little Creek, Va.

ENS Howie S. Ferguson
BSCE/Univ. of Florida
to Portsmouth NSYD, N.H.

ENS Patrick A. Garin
BA. Arch./Univ. of
New Mexico
to NAS Jacksonville, Fla.

ENS Mala A. Hansen
BSCE/BS Arch. Des./MIT
to NAF Sigonella, Italy

LT Franklin Hickman
BS, Chem. Eng./ Georgia Tech.
to NAVPHIBASE, Little Creek, Va.

ENS Zaki H. Kirlakos
BSEE/New Mexico State
to NORTHDIV Cont. Off., Crane, Ind.

ENS John A. Kliem
BSCE/Texas A&M
to MCAS El Toro, Santa Ana, Calif.

ENS Duane J. Kopp
BSCE/Iowa State
to WESTDIV Cont. Off., Oakland, Calif.

ENS Robert J. Kowalski
BSME/USNA, MSME/ Catholic Univ.
to SOUTHDIV Cont. Office, Key West., Fla.

ENS Christopher M. Kurgan
BSME/Vanderbilt Univ.
to NMCB 74, Gulfport, Miss.

LT Russell H. Lamb
BSOE/USNA
to Charleston NSYD, NS Charleston, S.C.

ENS Kevin C. McCue
BSME/ Texas A&M
to LANTDIV Cont. Off., Sewells Point, Va.

ENS Thomas J. Mitorsj
BSCE/Univ. of Illinois
to NS Panama Canal, Panama

ENS Danny L. Moser
to SOUTHDIV Cont. Off., Key West, Fla.

LT William C. Newton
BSCE/Auburn Univ.
to OICC Trident, Kings Bay, Ga.

ENS Gary R. Okafuji
BSEE/Cal. State, Long Beach
to WESTDIV Cont. Off., Adak, Alaska

ENS Ray K. Otto
BSME/Univ. of Michigan
to NAVSUPPACT, New Orleans, La.

ENS Michael A. Read
BSCE/Univ. of New Hampshire
to NAVSECGRUACT, Adak, Alaska

ENS Thomas W. Rose
BSCE/N. Carolina State Univ.
to SOUTHDIV Cont. Off., Mayport, Fla.

ENS Brent W. Rowse
BSME/SDS M&T
to LANTDIV Cont. Off., Camp Lejeune, N.C.

ENS Kevin L. Roye
BSCE/Florida Ag. & Mech.
to NETC, Newport, R.I.

ENS Mark K. Saunders
BSCE/Auburn Univ.
to NMCB 40,
Port Hueneme, Calif.

ENS Jeremy M. Schwartz
BSCE/Calpoly, San Luis Obispo
to PWC Yokosuka, Japan

LT David J. Sienicki
BME/Georgia Tech
to NSYD, Philadelphia, Pa.

ENS Charles C. Smith
BSOE/USNA
to LANTDIV Cont. Off., Camp Lejeune, N.C.

ENS Douglas J. Smith
BSME/Vrg. Polytech
to PWC Great Lakes, Ill.

ENS Michael R. Spaulding
BSME/Univ. of Oklahoma
to SOUTHDIV Cont. Off., Dallas, Texas

ENS Matthew E. Sylvest
BSME/Texas A&M Univ.
to PWC Guam

ENS Thomas J. Trompeter
BSCE/Univ. of Florida
to LANTDIV Cont. Off., GTMO, Cuba

ENS Darrell E. Turner
BS Arch./Penn State Univ.
WESTDIV Cont. Off., 29 Palms, Calif.

ENS D. G. Van Cleave
BSCE/N. Arizona Univ.
to SOUTHWESTDIV, San Diego, Calif.

ENS Chinh T. Vu
BSEE/VMI
to LANTDIV Cont. Off., Cherry Pt., N.C.

ENS Ronald J. White
BSCE/Santa Clara Univ.
to NORTHDIV Cont. Off., New London, Conn.

ENS Gary B. Wilder
BSEE/Univ. of Florida
to OICC MIDPAC, Pearl Harbor, Hawaii

The Naval Facilities Engineering Command In the Year 2000

By Dr. Doris E. Byrd

To be successful in today's marketplace, a service organization such as the Naval Facilities Engineering Command must anticipate and meet its customers' needs with quality products and services. This will require teamwork, communication and mutual understanding among NAVFAC, our contractors and our customers. We are successful only if we meet our customers' needs.

NAVFAC has embarked on two initiatives to improve the way we do business with our contractors and customers into the 21st Century. We are committed to long-range, continuous Strategic Planning and Total Quality Leadership.

The Strategic Plan contains a vision for the year 2000 and broad goals in four key areas: customer focus, products and services, people, and business practices. Our long-term strategy for achieving many of these goals is to carry out TQL.

This management philosophy, taught in Japan by Dr. W. Edwards Deming, has been credited with dramatically improving the quality of Japanese, and now American, products and services. TQL identifies, analyzes, improves and redesigns the processes by which we produce products and services. It focuses on continuous improvement in production, service and support; teamwork; meeting and exceeding customer needs; training; and employee participation.

TQL encourages teamwork and communication among NAVFAC, the contractors and customers. We will work with our contractors to get quality products. At the same time, we will make NAVFAC more responsive to customer needs and more effective internally.

Total Quality Leadership Works

TQL is not a quick fix. NAVFAC is in it for the long haul. Ultimately the test of TQL lies in our ability to change our corporate culture and to achieve significant improvements in quality. We expect the cultural transformation to take five to 10 years. However, in the meantime, there is solid evidence that TQL is working.

- One of our first TQL efforts was to improve our process for hiring A/Es. A team from headquarters and our engineering field divisions studied the process and recommended changes which were tested at three of our engineering field divisions during 1990. One EFD reported the time it takes to hire an A/E, using these procedures, was cut by two-thirds. We are now implementing these changes. This will take time but will result in significant time savings and better service to our customers.

- Our public works center in Pearl Harbor improved the way it does the annual inspection summary development for our Navy customers.

- A team from our public works center in Pensacola analyzed and improved the escort process for maintenance workers in secure areas. This improvement saves our Navy customers the equivalent of one person/year of effort.

- At our engineering field divisions, teams looking at master planning have recommended changes to improve quality and make the master plan more "user friendly" in about one-third less time. These changes are now being implemented.

- A team analyzing contracting for maintenance services has identified several problem areas.

Achieving quality is a never-ending process that requires teamwork with our customers, our contractors and our NAVFAC people. ❑

Dr. Byrd is the special assistant for policy and strategy at the Naval Facilities Engineering Command in Alexandria, Va.

Admiral Ben Moreell Hall Is Dedicated

By JOSN Chris Carlson

"The Seabee spirit is something to be proud of. Admiral Moreell would be proud of the Seabee spirit and dedication it took to build this facility," said Rear Admiral David E. Bottorff, CEC, USN, commander of the Naval Facilities Engineering Command and Chief of Civil Engineers, during the dedication of Admiral Ben Moreell Hall on Feb. 4.

Admiral Ben Moreell Hall, which houses the Civil Engineer Corps Officers School and the Naval Facilities Contracts Training Center, was dedicated at Naval Construction Battalion Center, Port Hueneme, Calif.

The dedication ceremony took place outdoors near the main entrance of the hall on a typical Southern California day—balmy with a mild overcast. The dedication was attended by more than 400 dignitaries and guests including three former commanders of NAVFAC: Rear Admiral J.F. Jelley, CEC, USN (Ret), Rear Admiral W.M. Zobel, CEC, USN (Ret), and Rear Admiral B.F. Montoya, CEC, USN (Ret).

The 68,300-square-foot facility houses the Moreell Library, nine classrooms, student work group areas, an auditorium, computer lab, and an administrative support space for both CECOS and NFCTC. The hall contains state-of-the-art audio-visual equipment to enhance instructional capabilities and active and passive technology for energy conservation. Throughout the hall, timelines depict the progression of NAVFAC, Navy air, submarine and surface communities, and the Seabees throughout the years.

A bust of Admiral Ben Moreell is unveiled by (from left) Rear Admiral Paul Rosser, USNR, commander, Reserve Naval Construction Force/First Reserve Naval Construction Brigade; Patricia Moreell, daughter of ADM Moreell; and Lieutenant Herbert Cooley, USNR.

ADM Moreell was the organizer of the Navy's Construction Battalions, the famed Seabees of World War II.

While holding the rank of commander, he was personally selected by President Franklin Roosevelt to be chief of Bureau of Yards and Docks and Chief of Civil Engineers with the rank of rear admiral. He later became the only CEC officer to achieve the four star rank of admiral. ❑

Admiral Ben Moreell Hall was dedicated on Feb. 4.

Gov. Wilson Proclaims March 5 "Seabee Day" in California

The Seabees received some well deserved recognition when Governor Pete Wilson declared March 5, 1991, as Seabee Day in California. In recognition of the event, six Seabees homeported at the Naval Construction Battalion Center in Port Hueneme received a proclamation from Wilson on behalf of all the "men in green."

The Seabees who accepted the proclamation were Lieutenant Kevin R. Slates, CEC, USN, Utility Constructionman Master Chief Mark Simpson, Construction Mechanic Chief Kurt Lavrinc, Mess Management Specialist First Class Reinaldo Ortiz, Steelworker First Class Austin Leedom and Steelworker Third Class James Beisen. All men had recently returned from deployment in Saudi Arabia.

Also on hand for the celebration was retired Rear Admiral Benjamin F. Montoya, former commander of the Naval Facilities Engineering Command and Chief of Civil Engineers.

The proclamation stated:

WHEREAS, the members of the U.S. Navy's construction battalions for building aviation bases and facilities have come to be more commonly known as "Seabees"; and

WHEREAS, throughout their 49 year history, Seabees have been widely noted for their dedication, patriotism and exceptional job performance and have proven to be a

Photo by PH3 Tony J. Koch

UCCM Mark Simpson, SW3 James Beisen and LT Kevin R. Slates (left to right) pose with Gov. Pete Wilson of California after receiving a proclamation in celebration of the Seabees' 49-year history.

vital segment of our nation's armed forces; and

WHEREAS, currently, there are four Seabee Battalions in service in the Middle East working to support our nation's military personnel deployed in Operation Desert Storm; and

WHEREAS, on March 5, 1991, Seabees from throughout our state and nation will be celebrating the 49th anniversary of their founding and it is most appropriate that all citizens join in saluting them on this special day of observance;

NOW THEREFORE, I, PETE WILSON, Governor of the State of California, do hereby proclaim March 5, 1991, as Seabee Day in California as recognition of the valuable role which Seabees have played and will continue to play in support of our nation's military.

Total Quality Leadership and the Small Business Program

In keeping with the Long Range Strategic Plan and the principles of Total Quality Leadership, the Naval Facilities Engineering Command Small Business Program was reviewed and a draft plan for the future was sent to the engineering field divisions for comments.

The program focus was the first area of change. In the past, the program established *quantitative* goals, relied on the contracting side of the house for implementation, and was learned by OJT. The new focus calls for *qualitative* goals which meet the needs of the small business community as well as the Navy requirement, the involvement of all functional disciplines, and a comprehensive education program.

As a result of the new focus of the program, these goals were established for the small business program:

- Pursue a total quality concept in all processes
- Involve all command levels and functional disciplines through improved program planning and accountability
- Establish and manage a meaningful education program for all small business advocates and other NAVFAC personnel
- Ensure that participation is meaningful for the Small Business Program and NAVFAC
- Increase public awareness of NAVFAC small business efforts

CDR William L. Rudich Wins the 1990 Moreell Medal

Congratulations to Commander William L. Rudich, CEC, USN! He is the winner of the 1990 Moreell Medal.

CDR Rudich is the operations officer at Commander, Naval Construction Battalions, U.S. Pacific Fleet (COMCBPAC) in Pearl Harbor, Hawaii.

As an officer and an engineer, CDR Rudich accomplished one task after another in 1990, from the South Pacific hurricane recovery in American Samoa to civic action throughout the South Pacific. Most notably, he was the key individual responsible for guiding nearly every action leading up to the highly successful mobilization and deployment of Seabees in support of Operation Desert Shield.

He led the Third Naval Construction Regiment into Saudi Arabia for Operation Desert Shield with the largest deployment of Seabees since the Vietnam conflict.

The Moreell Medal is given annually by the Society of American Military Engineers to the Civil Engineer Corps officer or civilian who has made the most outstanding contribution to military engineering through achievement in design, construction, administration, research or development connected with military engineering.

NMCB Five Wins the FY 1990 Peltier Award

Well done to U.S. Naval Mobile Construction Battalion Five, the recipient of the FY 1990 Peltier Award. The award is presented annually by the Society of American Military Engineers to the most outstanding Naval Mobile Construction Battalion in the active Naval Construction Force.

While deployed to Roosevelt Roads, Puerto Rico, with details in Panama; Bermuda; Andros, Bahamas; Antigua; Honduras; Vieques, Puerto Rico; Guantanamo Bay, Cuba; Thurmont, Md.; and Charleston, S.C., NMCB Five completed all construction project tasking in a timely manner, including many difficult disaster recovery projects, with high quality workmanship. Camp maintenance, supply operations, and CESE management were performed in an outstanding manner.

The battalion's early deployment in support of Operation Desert Shield was superbly executed, with its air detachment leading the way to provide critical advanced base construction.

The battalion's disaster recovery efforts after Hurricane Hugo and its security efforts during Operation Just Cause were noteworthy.

Get Ready to Celebrate the 50th Anniversary of the Seabees!

The year 1992 will mark the 50th anniversary of the founding of the Seabees.

Plans are currently underway to have a yearlong series of geographically dispersed events in 1992 in which many of the Seabees past and present can participate.

The objectives will be to honor our Seabee heritage, reflect on the contributions to our nation and the world, and to have fun! Whether you are a "plank-owner" from the days of World War II or the youngest Seabee today serving today, we all have special memories and will be eager to share them with former shipmates.

Volunteers are needed since we can only spend appropriated funds for authorized purposes. It will be important to know how former Seabees can be located. We know how to contact current active and reserve Seabees, but we want to reach everyone. We have started a giant mailing list with the goal of rounding up all the Seabees still alive.

An executive committee and regional coordinators will direct the effort. Captain Brian J. O'Connell, CEC, USN, at the Naval Facilities Engineering Command headquarters, is the overall 50th Anniversary Chairman. You can contact him by writing Captain B.J. O'Connell, CEC, USN, Headquarters, Naval Facilities Engineering Command, Code CB50, 200 Stovall St., Alexandria, Va. 22332-2300, or calling (703) 325-0556.

Have you considered the Reserves?

For a challenging, rewarding career...

If you are a young construction professional in civilian practice or civil service, or are a graduating engineering or architecture college senior who has already selected a civilian career path, the Reserve Civil Engineer Corps may have a place for you as a commissioned officer.

Qualified young professionals have the chance to achieve tremendous personal and professional satisfaction through...

✔ Direct appointment as an ensign, Civil Engineer Corps, United States Naval Reserve

✔ Challenging assignments within reserve Naval Construction Force units in your geographic locale, in areas paralleling active duty in the Seabees or in facilities management

✔ Annual active duty for training that is meaningful and rewarding

✔Development of leadership and technical skills that will carry over directly into your civilian profession

✔ New and lasting friendships and associations with other top-notch construction professionals

✔ Pay and responsibility that increase as you grow and advance

✔ A Naval Reserve retirement package for a little something extra in your old age

✔ Finally, and most importantly, the pride in knowing that you are helping preserve the freedom of your country as you grow in your profession

Here's what you can do...

If you are a young engineer or architect, please call a Reserve representative listed below.

LCDR Scott Cleveland, CEC, USN
Atlantic Region, RNCF
Naval Base, Building NH47
Charleston, SC 29408
Phone: (803) 743-2650
1-800-535-7936
AV 563-2650

LCDR Doug Stauffer, CEC, USN
Pacific Region, RNCF
1220 Pacific Highway, Building 129
San Diego, CA 92132-5190
Phone: (619) 532-2142
AV 522-2142

Or, contact an active duty EFD Accessions Officer listed on the inside front cover for further information and details.

Navy Civil Engineer, Code OODA
Naval Facilities Engineering Command
200 Stovall Street
Alexandria, VA 22332-2300

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NCEMAG/1043/0001
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ANN ARBOR, MI 48106-